In the claims:

1. (original) A method of time-locking a first node to a second node, the first node having a first controller that includes a first time counter and the second node having a slave controller and a master controller that includes a master time counter, the method including steps of:

said first node controller sending an upstream control burst to said second node during a designated time interval, said upstream control burst including a time measurement;

said slave controller directing said upstream control burst to said master controller; and

said master controller comparing said time measurement with a reading of said master time counter to ascertain time alignment;

wherein if said comparing indicates absence of time alignment the method implements the further steps of:

said master controller sending a downstream control burst to said first controller, said downstream control burst indicating absence of time alignment;

said first node sending a succession of upstream control bursts each including a measurement of said first time counter;

said slave controller directing a sample of said upstream control bursts to said master controller during a designated time interval;

said master controller acquiring an upstream control burst from said sample and determining a corresponding reading of said master time counter, said reading being coincident with said one of said succession of upstream control bursts;

said master controller sending said corresponding reading to said first controller; and

said first controller resetting said first time counter according to said corresponding reading.

2. (original) The method of claim 1 including the further step of said first node sending payload data bursts alongside upstream control bursts to said second node after said resetting.

3. (original) The method of claim 2 including the further step of said first node sending payload data bursts alongside upstream control bursts to said second node if said comparing indicates time alignment.

4. (original) The method of claim 3 wherein said payload data bursts and said upstream control bursts are transmitted from said first node at scheduled instants of time.

5. (original) The method of claim 4 including the further step of said slave controller directing said second node to switch payload data bursts received from said first node after said resetting.

6. (original) In a composite-star network having a plurality of edge nodes communicatively coupled to a plurality of core nodes, the method of claim 1 wherein said first node is any of said edge nodes and said second node is any of said core nodes.

7. (original) The method of claim 6 including the further step of any of said plurality of edge nodes applying time locking to more than one of said core nodes.

8. (withdrawn) A core node having at least two space switches, said core node connecting to a plurality of edge nodes, each of which edge nodes having channel-switched paths and burst-switched paths to said core nodes.

9. (withdrawn) The core node of claim 8 further including a device for time locking each of said plurality of edge nodes to said core node wherein precise time locking is acquired only for said burst-switched paths.

10. (withdrawn) The core node of claim 9 including the further step of implementing associative time locking of any of said channel-switched paths from said precise time locking.

11. (withdrawn) The core node of claim 10 wherein said associative time locking is determined according to an estimate of the difference in propagation delay between said channel-switched path and said burst-switched path.

12. (original) A core node having a plurality of space switches wherein each space switch comprises:

a plurality of burst-mode input ports and a plurality of output ports;

a master controller, a slave controller; and

a controller switch having mi receiving ports and $(m_1 + m_2)$ sending ports, said mi receiving ports connecting to incoming mi channels, m_1 of said sending ports connecting to m_1 input ports of said space switch, and m_2 ports connecting to m_2 ports of said master controller,

wherein said master controller is operable to:

instruct said controller switch to direct incoming channel from selected edge nodes to said master controller,

send instructions to said selected edge nodes, said instructions including a request to send time-counter readings;

continuously read data received from said selected edge nodes via said controller switch to identify said time-counter readings; and

reply to said selected edge nodes with timing information corresponding to said time-counter readings.

13. (original) The core node of claim 12 wherein any subset m_2; of said mi upstream wavelength channels can be directed away from the space switch and toward m_2 time-locking-recovery interfaces to implement a time-locking recovery procedure.

14. (original) The core node of claim 13 wherein the number m_2 is substantially smaller than the number m_1.

15. (original) A core node in a composite-star network comprising a plurality of space switches, each of said plurality of space switches comprising:

a plurality of burst-mode input ports and a plurality of output ports;

a master controller, and a slave controller;

a selector having a plurality of selector inputs and a plurality of selector outputs, each of said plurality of selector outputs communicatively connecting to said master controller; and

a plurality of input switches, each of said plurality of input switches having a switch input and at least two switch outputs, where one of said switch outputs is communicatively connected to one said selector input and another one of said switch outputs is communicatively connected to one of said input ports of said space switch,

wherein said master controller is operable to:

instruct selected ones of said plurality of input switches to connect channels from corresponding source nodes to said selector;

instruct said selector to select inputs received from said selected ones of said plurality of input switches for transmitting to said master controller;

send instructions to sink nodes associated with said corresponding source nodes, said instructions including requests to send time-counter readings;

continuously read data received from each of said corresponding source nodes via said selector; and

reply with timing information corresponding to said time-counter readings.

16. (original) The core node of claim 15 wherein said master controller is operative to detect the absence of time-locking by examining data received according to a predetermined burst schedule.

17. (original) The core node of claim 16 wherein the number of inputs in said plurality of selector inputs substantially exceeds the number of outputs in said plurality of selector outputs.

18. (withdrawn) A master controller of an optical switch, said master controller comprising:

an input interface for receiving upstream control bursts from a plurality of source nodes;

a master time counter;

a burst scheduler for generating a burst-switching schedule based on said upstream control bursts, said burst-switching schedule determining an interval in time at which each burst received at an input port of said optical switch is switched to an output port of said optical switch;

a transmitter operative to transmit instructions to a slave controller associated with said space switch, where said instructions are based on said schedule;

an output interface for communicating said burst-switching schedule and readings of said master time counter to a sink node associated with said source node;

a detector operative to detect loss of time locking of any upstream optical signal based on said upstream control burst; and

secondary means for directing a number of upstream optical signals toward said master controller.

19. (withdrawn) The master controller of claim 18 wherein each of said readings of said master time counter is taken contemporaneously with the time of arrival of a corresponding upstream control burst.

20. (withdrawn) The master controller of claim 19 wherein said secondary means includes a device for sampling a succession of upstream control bursts of equal sizes, each containing a reading of a time-counter of a source node, said upstream control bursts routed to the master controller through said space switch during designated time intervals.

21. (withdrawn) The master controller of claim 20 wherein the duration of each of said designated time intervals is at least double the duration of one of said upstream control bursts.

22. (withdrawn) The master controller of claim 19 wherein said secondary means includes a controller switch that diverts an upstream optical signal away from said space switch and toward the master controller.

23. (original) A method of enabling, at an edge node, the alignment of arrival at a core node of corresponding data bursts from a plurality of output ports at said edge node, where each of said plurality of output ports includes an output-port time counter, and each of said plurality of output ports starts sending to said core node a set of data bursts when its output-port time-counter assumes an output-port-specific start time, said data bursts including upstream control bursts and upstream payload bursts, said method including the steps of:

receiving reply downstream control bursts from said core node, in response to said upstream control bursts;

extracting, from said reply downstream control bursts, a time value for each said output port corresponding to a reading of a time-counter at said core node when each said upstream control burst was received;

determining, for each said output port, an update to said output-port-specific start time, based on said time value; and

instructing each of said plurality of output ports to start sending said set of data bursts when said edge node time-counter takes on said update to said output port-specific start time.

24. (original) The method of claim 23 including the further step of setting a time counter of any of said output ports by association with a time counter of another of said output ports.